



## BUYING TIPS: UPSes

**ULTIMATELY**, the primary question IT should ask when buying UPSes is what level of protection is needed, says Brett Femrite, director of business development at Rackmount Solutions ([www.rackmountsolutions.net](http://www.rackmountsolutions.net)). “A basic surge protector/suppressor will go a long way to protect your equipment from power spikes and surges, but in the case of power outages, you need to look at a UPS,” he says. To that end, consider the following buying tips.

**Top features to consider.** Beyond a high efficiency rating (95% or greater), James Hall, marketing manager at Staco Energy Products ([www.stacoenergy.com](http://www.stacoenergy.com)), says UPS systems should offer a high input power factor (greater than 99%), low input distortion (3% or less), easy installation and accessibility, and an external maintenance bypass switch. Other notable features include high-performance filtering to protect upstream power sources and dual inputs for the main and secondary emergency standby power. Hall advises to select a UPS that has sufficient capacity to handle the IT loads, adding that UPSes exceeding their capacities is one of the highest causes of data center downtime.

Capacity-wise, Femrite advises to purchase a unit that exceeds your total power requirement by 20 to 30%. “This not only ensures capacity coverage but will also allow some room for growth if/when you add

additional pieces of equipment,” he says. Where runtime is concerned, Femrite says, “It can be a great cost savings down the road if you factor in future expansion and buy a UPS that offers the ability to upgrade or add additional batteries if/when needed.”

**UPS types.** The three primary UPS categories include standby, line-interactive, and online models, Femrite says, with different iterations existing within each category. Standby systems run power through surge suppression to the equipment; if there’s a power outage, the UPS switches to battery backup power, reverting back to AC power when power returns. Line-interactive systems have built-in line-sensing abilities to regulate high or low voltage levels. An inverter switches on if there’s a power loss, and the system switches to battery power. Online systems provide the highest protection level, Femrite says, as the inverter is online and operates continually to eliminate incoming surges and low and high voltage issues while delivering clean power to equipment.

**Data center-grade features.** For data center use, Hall says three-phase online double conversion (converts AC power to DC and then back to AC) systems offer the greatest value while also providing conditioned power to IT loads. “These UPS systems totally isolate the load from the primary AC line,” he says. “Noise, sags,

### Buyers’ Checklist

- ✓ What type of UPS system do you need?
- ✓ Is the UPS sized to properly handle the loads required?
- ✓ Are the necessary monitoring and management tools provided?
- ✓ Does the UPS offer sufficient runtime and capacity?
- ✓ Is the UPS backed by insurance or a guarantee?

### Key Terms

**Capacity:**

The maximum amount of power a UPS can handle.

**IGBT and DSP:**

Short for insulate-gate bipolar transistors and digital signal processors, respectively, these components provide for true online double conversion in UPS systems.

**Runtime:**

The length of time a UPS will continue providing backup power in event of a power outage.

and swells never reach the load.” Overall, Hall says obtaining the lowest TCO should be a primary objective. “This includes battery and other auxiliary hardware,” he says. He advises to determine what the cost to acquire, operate, and maintain equipment will be over the equipment’s lifetime. Additionally, key factors include high sustainability, space efficiency, ease of installation, integration with existing systems, scalability, and high reliability.

**Size matters.** In terms of data center-grade UPSes, Femrite cautions one size doesn’t fit all. “It’s more about design and configuration than type,” he says. Budget, kW/MW capacity, availability requirements, and risk tolerance are other factors, as is recognizing that as the configuration gets higher on the availability/dependability scale, the associated

costs also increase. “Redundancy, system efficiency, distributed architecture, maintenance, and fault tolerance (eliminating single points of failure) are all key considerations when evaluating data center-grade UPS solutions,” Femrite says. Hall adds that SMEs should take transient loads into account when determining ideal UPS size.

**Batteries.** When factoring in batteries, Femrite says, “the solution you select should be able to notify you of any issues with battery performance or maintenance needs.” Hall points out that battery life will degrade with age, even if they don’t encounter lots of discharge cycles. Thus, if your minimum runtime requirements are critical, “the battery should be selected to provide some cushion so that after several years, minimum runtimes can still be achieved,” Hall says. ■